PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicant:	Stubbe et al.
Group Art Unit:	1713
Examiner:	Dr. Kelechi C. Egwim
Title:	Aqueous Dispersion of Inorganic Nanoparticles, Method for the Production and Use Thereof
Attorney Docket:	PAT-01026 (0906S-000431/NP)

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Reply Brief Under 37 C.F.R. § 41.41

Sir:

In response to the Examiner's Answer having a notification date of May 1, 2008, Appellants file this Reply Brief.

Response to the Examiner's Answer

The rejections by the Examiner are based solely on an erroneous interpretation of the present claims. The Examiner is improperly and incorrectly reading the present claims in context of the Kambe reference. Proper claim construction begins first with the claims themselves and with the claims read in context of the present specification – not the Kambe reference. When the claims are properly construed on their face and in view of the present specification, it is clear that the Kambe reference does not account for all of the claimed features and is therefore not an anticipatory reference and cannot establish a prima facie case of obviousness.

Words of a claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). "Plain meaning" refers to the ordinary and customary meaning given to the term by those of ordinary skill in the art. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005) (*en banc*). Moreover, during patent examination, pending claims are given their broadest reasonable interpretation consistent with the specification. These standards are illustrated in *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) where the court stated:

> The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827 (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so

> that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 CFR 1.75(d)(1).

415 F.3d at 1316, 75 USPQ2d at 1329.

As such, the first step of claim construction is ascertaining the plain meaning of the claim language as viewed by a skilled artisan and the second step of claim construction is ensuring that the interpretation is consistent with the specification. In the present case, the Examiner fails to base his interpretation on any evidence of the plain meaning of the claim features as recognized by a skilled artisan and further fails to interpret the claim features in a manner consistent with the present specification.

With respect to the plain meaning of claim 1, a person of ordinary skill in the coatings art recognizes the claimed aqueous dispersion includes four distinct entities or components. For convenience, an abbreviated version of claim 1 is reproduced below:

> 1. An aqueous dispersion, comprising
> (A) at least one swellable polymer and/or oligomer…
> (B) surface-modified, cationically stabilized, inorganic nanoparticles of at least one kind, wherein the nanoparticles are modified with at least one compound of the general formula I:
> $[(S\text{-})_o\text{-}L\text{-}]_mM(R)_n(H)_p$ (I)…
> (C) at least one compound selected from the group consisting of amphiphiles and organic compounds which are capable of forming chelate ligands, and
> (D) at least one crosslinking agent,…

It is clear on its face that claim 1 separately sets out features (A), (B), (C), and (D). Moreover, these features do not modify each other, as there is no language tying one to the other or providing interconnecting structure, and each of (A), (B), (C), and (D) stands alone and does not refer to any of the other recited features in whole or in part. Thus, (A), (B), (C), and (D) in claim 1 are plainly separately differentiated elements. See

In re Angstadt, 537 F.2d 498, 190 USPQ 214, 217 (C.C.P.A. 1976) (effect must be given to all claim limitations); *In re Wilder*, 429 F.2d 447, 166 USPQ 545, 548 (C.C.P.A. 1970) (every limitation positively recited in a claim must be given effect in order to determine what subject matter that claim defines); and *Diamond v. Diehr*, 450 U.S. 175, 188-89, 209 USPQ 1, 9 (1981) (claims must be considered as a whole).

That (A), (B), (C), and (D) are separate components is further evinced by these terms as recognized by a skilled artisan. For example, the (D) crosslinking agent includes those normally used in the field of thermally curable coating materials. Present specification page 15, lines 16-17. The (D) crosslinking agent contains reactive functional groups which are able to undergo reactions with themselves and/or with complementary reactive functional groups, for example, groups present on the polymer and/or oligomer (A), on the surface-modified nanoparticles (B), and/or in the amphiphile (C). Page 15, lines 17-21. The only way the (D) crosslinker can react with complementary groups on each of (A), (B), and (C) is if these components are separate entities.

A skilled artisan also appreciates that a crosslinking agent is its own distinct entity with the potential to crosslink other components of a coating composition via reactive functional groups. It is not already crosslinked and incorporated into another compound. For example, see the tris(alkoxycarbonylamino)triazines described on page 16, lines 1-14; and melamine-formaldehyde resins (CYMEL® 327, hexamethoxymethyl type) in Examples 1 and 2. In addition, (B) sets out the nanoparticles as already modified with at least one compound of the general formula I. For example, if the crosslinker was part of the compound of formula I used to modify the inorganic nanoparticles, as suggested by

the Examiner on page 4, lines 13-16 of the Examiner's Answer, the recitation of (D) in claim 1 would be redundant and mere surplusage in view of the recitation of formula I in (B). Such an interpretation is contrary to the plain meaning of the present claim language, the separate recitation of these features, and is wholly inconsistent with the present specification.

With respect to ensuring that the interpretation of claim 1 is consistent with the specification, the present specification only describes (A), (B), (C), and (D) as separate components of the composition of claim 1 and there is not one instance or example provided therein where one of (A), (B), (C), and (D) is part of or substitutes for the other. Component (A) is described on page 5, line 26 to page 7, line 19. Component (B) is described on page 9, lines 14-16; page 10, line 3 to page 14, line 2; page 10, lines 22-27; and page 8, lines 1-18. Component (C) is described at page 14, line 16 to page 15, line 8. Component (D) is described at page 15, line 16 to page 16, line 31. Furthermore, Example 1 in the specification illustrates an embodiment of the claimed aqueous dispersion, including the separate and distinct components: copolymer (A) from Preparation Example 1, surface-modified nanoparticles (B) prepared in Preparation Example 2, ethyl acetoacetate as component (C), and a melamine-formaldehyde resin (CYMEL® 327, hexamethoxymethyl type) as a crosslinker for component (D). Consequently, the only consistent manner to read claim 1 with respect to the various examples and particular compound species provided in the specification is to view each of (A), (B), (C), and (D) as separate entities.

It is clear that none of (A), (B), (C), and (D) can be one and the same. The plain language of claim 1 and the claim features read in a consistent fashion with the present

specification demonstrate this fact. The Examiner's claim interpretation is therefore both unreasonable and incorrect. The Examiner has improperly constructed the present rejections based solely on interpreting the claim in view of the Kambe reference, which is an incorrect approach. What is more, the Examiner has not cited any support whatsoever for his interpretation of claim 1. The Kambe reference certainly cannot serve as the primary reference in defining or illustrating Appellants' claims, according to the precepts set by *Phillips v. AWH Corp.*, supra.

The Examiner is also incorrectly applying *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993) with respect to claim interpretation, on page 5 of the Examiner's Answer. Indeed, limitations from the specification are not to be read into the claims – but each limitation positively recited within the claim must be given effect in order to determine what subject matter the claim defines. See *In re Wilder*, supra. Thus, each of (A), (B), (C), and (D) must be given full effect consistent with the specification. For example, the (B) surface-modified, cationically stabilized, inorganic nanoparticles already have their surface modified (as both claimed and described in the specification on page 9, lines 14-16; page 10, line 3 to page 14, line 2; page 10, lines 22-27; and page 8, lines 1-18) and the (D) crosslinking agent has the potential/ability to crosslink, and is not already crosslinked (as both claimed and described in the specification on page 15, line 16 to page 16, line 31) so there is no reasonable way to conclude that (B) and (D) can be the same entity.

As another example, the (C) amphiphile or compound capable of forming chelate ligands (as both claimed and described at page 14, line 16 to page 15, line 8) is recited in claim 1 along with both the (B) nanoparticles (whose surface is already modified) and

the (D) crosslinker. The specification illustrates that the amount of (C) present in the dispersion is based on the sum of the essential constituents (A), (B), (C), and (D), of from 1-30%, clearly indicating that these each are separate entities. Page 15, lines 11-14. The tortuous construction set forth by the Examiner, premised on the Kambe linker, requires that (C) = (B) = (D), but the plain language in claim 1 includes three distinct objects, where tellingly object (B) is further described as existing in a surface-modified state. There is no way to reconcile all of Appellants' claimed features based on the Kambe dispersion, nor is there any reason to even do so. The Examiner's interpretation that a single compound can operate as more than one of (A)-(D) creates inconsistent redundancies with respect to express claim features and is also unreasonable in view of the present specification. The present rejections are consequently based on erroneous claim construction and cannot stand.

In sum, claim 1 is drawn to an aqueous dispersion that includes at least one kind of cationically stabilized, inorganic nanoparticles whose surface is modified with a compound of formula I, at least one crosslinker, and at least one compound capable of forming chelate ligands. These three separate features are not found in the Kambe reference. The Examiner's interpretation of the claims is contrary to the plain meaning of the claim features in view of the specification and accepted rules of claim construction. The Examiner's interpretation is also contrary to the claim features as generally understood in the art. Consequently, the present claims are novel and not anticipated. See *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (each and every element as set forth in the claim must be present in the reference for the claim to be anticipated). What is more, the Kambe reference fails

to provide an apparent reason to include the missing subject matter and no reason based on the general knowledge in the art is provided to account for these shortcomings. See *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007) (obviousness includes determining "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue"). Claim 2 is therefore not obvious over Kambe.

Accordingly, the 35 U.S.C. §§ 102(b) and 103(a) rejections based on Kambe should be REVERSED.

For these and the other reasons discussed above, Appellants respectfully request that the rejection of claims 1-7 and 9-20 be REVERSED.

Respectfully submitted,

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